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A FIRST-STOPPING REFERENCE WORK FOR
ALL COMPUTER USERS

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subset X of S , f maps the least upper bound of X to the least upper bound of the *image of X under f . Continuous functions are significant in *denotational semantics since they correspond to the requirement that a computational process produces arbitrarily close approximations to the final output, given arbitrarily close approximations to the total input.

A continuous function $f(x)$ has no breaks or instantaneous changes in value. In the hierarchy of mathematical functions the smoothest are those, such as $\sin x$, $\cos x$, that can be differentiated any number of times, always producing a continuous function.

continuous inkjet printer See INKJET PRINTER.

continuous signal, system See DISCRETE AND CONTINUOUS SYSTEMS.

continuous simulation See SIMULATION.

continuous stationery See STATIONERY.

continuous-tone image An image, such as a photograph, where the gray levels in the image are continuous and not discrete.

contradiction See TAUTOLOGY.

contrapositive of a conditional, $P \rightarrow Q$. The statement
 $\neg Q \rightarrow \neg P$

where \neg denotes negation. The contrapositive of a conditional is therefore equivalent to the original conditional. See also CONVERSE, INVERSE.

control bus A *bus that is dedicated to the passing of control signals.

control character A character that when typed at a keyboard or sent to a peripheral device is treated as a signal to control operating functions. See also CHARACTER SET, ASCII.

control circuitry Electric circuits within a computer or peripheral that regulate its operation.

Control Data Corporation See CDC.

control design The design of a *control unit. Control units may be designed using *random logic or *microprogramming. Microprogramming was well suited to the control of the complex sequences of register transfers required by CISC instruction sets.

RISC processors with their emphasis on the rapid execution of simple instruction sets usually employ random logic control to optimize performance.

control flow The sequence of execution of statements in a program.

control-flow graph A *directed graph representing the sequence of execution in a program unit, in which nodes represent branching points or subprogram calls in a program, and arcs represent linear sequences of code. From the control-flow graph an analysis can show

- the structure of the program,
- starts and ends of program segments,
- unreachable code and dynamic halts,
- branches from within loops,
- entry and exit points for loops,
- paths through the program.

See also STATIC ANALYSIS.

control key See KEYBOARD, CONTROL CHARACTER.

controlled sharing Making used resources available to more than one using resource through an *access control mechanism.

controller A subsystem that governs the functions of attached devices but generally does not change the meaning of the data that may pass through it. The attached devices are usually peripherals or communication channels. One of the functions of the controller may involve processing the data stream in order to format it for transmission or recording.

control line A conductor in a multiwire interface that conveys a control signal.

control memory Another name for microprogram store.

control points Points used in the specification of curves to define the general required shape.

control record A record that contains control totals derived by summing values from other records in a file. The totals may or may not have some sensible meaning. Their purpose is to check that none of the preceding records has been lost or altered in some way. See also HASH TOTAL.

control sequence A string of characters used to control the operation of a peripheral